SOCIETIES AND ACADEMIES

THE NATIONAL ACADEMY OF SCIENCES

The program of papers for the meeting of the National Academy of Sciences, held at the Johns Hopkins University, Baltimore, Md., on November 17 and 18, was as follows:

Henry F. Osborn: "The Close of the Cretaceous and Beginning of the Eocene in the Hell Creek Region of Montana." Based on explorations of the American Museum between 1902 and 1908.

A. G. Webster: "On the Distribution of Sound from the Megaphone, or Speaking Trumpet."

H. S. Jennings (introduced by Ira Remsen): "Elementary Species and the Effects of Selection in a Unicellular Organism."

R. W. Wood (introduced by Ira Remsen): "Absorption Spectra of Mixtures of Metallic Vapors."

R. W. Wood (introduced by Ira Remsen): "The Mercury Paraboloid as a Reflecting Telescope."

H. N. Morse: "Results Obtained in the Direct Measurement of Osmotic Pressure."

Simon Flexner: "Certain Examples of Biochemical Control of Cell Development. (*a*) Metaplasia of Transplantable Tumors. (*b*) Inhibition of *Spirocheta pallida*."

Russell H. Chittenden: "Further Studies on the Effect of a Low Protein Diet on High Protein Animals."

A. Agassiz and H. L. Clark: "The Echini of an Insular Fauna."

Alexander Agassiz: "The Work of the U. S. Fish Commission Ship *Albatross*."

H. C. Jones and John A. Anderson (introduced by Ira Remsen): "The Absorption Spectra of Solutions of Certain Salts."

John B. Watson (introduced by Ira Remsen): "The Reactions of Primates to Monochromatic Lights."

E. G. Conklin: "Effects of Centrifugal Force on the Organization and Development of the Eggs of Certain Animals."

C. R. Van Hise: "The Phosphates of the Soil."

B. O. Peirce: "Biographical Memoir of Joseph Lovering."

W. H. Dall and W. H. Brewer: "Biographical Memoir of William M. Gabb."

Charles S. Hastings: "Biographical Memoir of Josiah W. Gibbs."

THE SCIENTIFIC ASSOCIATION OF THE JOHNS HOPKINS UNIVERSITY

The Scientific Association of Johns Hopkins University held the first monthly meeting of the present scholastic year in Hopkins Hall, November 11. Two important papers were presented.

The first was by Professor J. B. Watson, the newly-elected professor of experimental and comparative psychology, upon the subject of "Methods and Apparatus in Comparative Psychology."

Professor Watson gave a brief description of the nature of the problems in comparative psychology. The position was taken that the behavior of animals can be studied in a scientific way; that the facts thus obtained can be stated objectively and that they deserve to have equal rank with other observations in experimental psychology and in biology.

The view was expressed that the study of the sensory processes of animals is the most hopeful field at present. Exact and scientific statements concerning the nature of color vision, hearing, smell, contact, etc., in animals are much needed. At present almost nothing is known in any exact way of the functioning of the sense organs of the higher animals. Such studies should be undertaken in a more comprehensive way than has heretofore been the case. Observations made by the same investigator on many species of animals are desirable at present. Only in this way can a true phylogeny of mind be obtained. When the facts are before us we shall be in a position to begin the comparison of the behavior of animals with the behavior of man.

Several pieces of apparatus for testing hearing, vision, temperature, etc., were briefly described. A description of an apparatus for the study of olfactory sensations was given at length. The principal feature of this apparatus consists of a constant air blast supplied with two vents. Two leads of glass tubing attached to these vents pass respectively into two flasks containing different odorous solutions, or different intensities of the same solution, and from the flasks to short metal tubes which project into a glass-lined, air-tight compartment. The ends of the two tubes protruding into the compartment are narrowed to an opening of 1 mm. The tubes are placed about twelve inches apart and are inclined at an angle such as to force the two streams of air, laden with the olfactory particles, to converge in a funnel situated in the opposite side of the compartment. To the stem of this funnel (which projects from the compartment) a tube is attached leading to a vacuum pump. Two fine streams of air are thus forced out over the surface of the odorous

fluids and thence into the compartment. At the same time the vacuum system at the opposite side of the compartment tends continuously to draw forward the two streams and to keep them in a straight line. Two partitions of glass extend from the side of the compartment through which the two streams are admitted. They run parallel to the air columns, meeting near the point at which the latter converge. The animal is admitted into the compartment at the point where the partitions meet. These partitions serve to keep the odors from mixing. Food is kept always with one of the two odors. The tubes and flasks are so arranged that they may easily be interchanged with respect to the right and left position. The animal has to go first to the right in order to get food, and then after the odors are interchanged, to the left. In the final control tests a special electric food dropping device serves to keep all food out of the compartment until the animal has actually made the correct choice.

The hope was expressed that, with the help of such an apparatus, much needed knowledge concerning the development and the manner of functioning of the olfactory sense organ might be obtained. It ought to be possible, *e. g.*, to find out whether the animal is sensitive to all the range of stimuli to which the human organism responds, and how far animals differ in this respect: whether or not it is easier for the animal to associate the *nauseous*, *hircine* and *fecal* odors with the getting of their food, than the *fruit*, *flower* and *musk-like* odors, etc. The quantitative study (delicacy) of the functioning of this sense offers great difficulties, but it is hoped that these can be overcome, at least to such an extent as to enable us to obtain records which may be compared with similar records from man. Functional problems similar to those which arise in the study of the olfactory field arise in the study of every other sensory field. Experimental psychology is recognizing this and is rapidly coming to extend its study of sensory processes to the animal world. There is no reason to limit experiment along these lines to man alone.

Such functional questions when answered will give us the much-needed complement to all the painstaking and exact structural work which has already been accomplished so abundantly.

The recent work of Madame Curie was then reviewed by Professor H. C. Jones, his subject being "Lithium not Produced from Copper Salts by the Action of the Radium Emanation."

About a year ago Sir William Ramsay announced that when the radium emanation is allowed to act upon a copper salt, there are formed sodium, potassium and a minute trace of lithium.

Quite recently Madame Curie has repeated this experiment and has failed to obtain the same result. The chief difference in the experiment as carried out by the two investigators is that Ramsay used glass vessels, while Madame Curie used vessels of platinum. In other respects the work as carried out in Paris seems to have been practically identical with that done in London. The amount of copper salt used, the amount of the emanation employed and the precautions taken by Madame Curie are strictly comparable with the conditions under which Ramsay worked.

In the Paris experiments small amounts of sodium and potassium were obtained, but no trace of lithium. Madame Curie thinks that the small quantities of sodium and potassium salts obtained by her were introduced along with the radium emanation.

The minimum quantity of lithium which could be detected in the residue obtained was tested by Madame Curie, and found to be much less than that which was present in the residue examined by Ramsay. She suspects that a part of the sodium and potassium, and all of the lithium found by Ramsay came from the glass vessels which he employed. She is, however, far from dogmatic, concluding her paper with the following words:

"In conclusion, we may say that we have been unable to confirm the results of Ramsay and Cameron. It is evidently impossible to affirm that no trace of sodium or lithium was found in the experiment; we believe, however, that the formation of these elements can not be considered an established fact."

If it is impossible for Madame Curie "to affirm," it is certainly impossible for any one else to do so at present. We must wait until further communications have been received from Sir William Ramsay; not forgetting that some of the finest experimental work that has ever been done in any branch of science has come from Ramsay's laboratory.

CHARLES K. SWARTZ,
Secretary

THE BOTANICAL SOCIETY OF WASHINGTON

AT the annual meeting of the Botanical Society of Washington, held November 10, 1908, the following officers were elected for the year 1908–9:

President—Professor C. V. Piper.

Vice-president—Mr. Thos. H. Kearney.
Recording Secretary—Dr. Haven Metcalf.
Corresponding Secretary—Mr. Wm. E. Safford.
Treasurer—Mr. J. H. Painter.

Dr. J. N. Rose, of the U. S. National Museum, was elected to represent the society as vice-president of the Washington Academy of Sciences.

Wm. E. Safford,
Corresponding Secretary

THE BOTANICAL SOCIETY OF WASHINGTON

The forty-ninth regular meeting of the society was held on the evening of April 25, 1908, Vice-president C. V. Piper presiding. Papers were read as follows:

Flies as Distributors of Spores: N. A. Cobb.

Dr. Cobb called attention to the ease with which spores and other small bodies may be carried about on the feet of flies, especially of the Muscidæ and Sarcophagidæ, which are provided with viscous hairs or papillæ. But a more probable source of the transmission of spores and disease germs is the depositing of excreta on food and on living organisms. On examination, fly-specks were found to contain spores of many kinds of fungi, sometimes fifty or sixty widely different kinds, which had been taken into the alimentary canal with the flies' food and had not been injured by the processes of digestion. In studying a certain fungus disease of the sugar cane Dr. Cobb found in the excreta of flies visiting the plant spores of practically all the fungus diseases which attack the cane. They undoubtedly are the chief if not the sole agents in transmitting the disease investigated.

Notes on Fomes igniarius: Perley Spaulding.

This fungus occurs very commonly in the deciduous forests of America. It is limited to deciduous trees. The aspen, butternut and beech are very susceptible to its attacks; the sugar maple and the balm-of-gilead are relatively resistant. The destruction caused by it is tremendous in many parts of the world. It may practically destroy all the mature timber of a certain species in a given locality; instances have been found where 90 to 95 per cent. of mature beech trees were affected. The investigations have shown that *Fomes igniarius* is strictly a wound parasite; it may live saprophytically on the dead tree or stub for several years; the death of the tree attacked is certain. The age of the host tree, presence of wounds and rapidity of healing of wounds are factors controlling the entrance of the fungus into the trunks.

The Problem of the Cuban Coconut Planter: John R. Johnston.

A serious disease has recently invaded the coconut groves of Cuba. It is there known as the bud-rot. In some localities it has destroyed all of the trees, in others it is just appearing. The disease is not confined to Cuba, but is widely spread in tropical America. Thus far, Porto Rico has escaped it. The disease proves to be bacterial. It is confined to the crown, or terminal bud, of the tree, in which it causes a soft, vile-smelling rot. Owing to the great height of the coconut trees and the difficulty experienced in getting at the terminal bud, surrounded as it is by the sheathing cases of the petioles of older leaves, it is almost impossible to treat the disease locally. It is not yet known how the disease is transmitted from one tree to another, but it is suspected that this may be through the agency of insects. Experiments are being carried on by the Department of Agriculture, the results of which will probably be published at a not very distant date.

Some Cases of Delayed Germination in Seeds: G. F. Klugh.

In attempting to cultivate drug plants, the life-history of which in most cases is little known, it was found that, almost as a rule, germination was delayed for at least a year. In planting *Aconitum navellus,* five spring plantings gave two total failures, two cases of germination, and one case of germination the same and the following spring. Mr. Klugh gave the results obtained in the cases of *Aragallus lambertii, Aristolochia serpentaria, Atropa belladona, Datura stramonium, Hyoscyamus niger, Solanum nigrum, Colchicum autumnale, Echinacea angustifolia, Glycyrrhiza glabra* (in which germination was increased after the seeds had been shaken with crushed glass), *Hedeoma pulegioides, Humulus lupulus, Hydrastis canadensis, Lobelia inflata* and *Panax quinquefolium,* the last of which required eighteen months or two years to germinate. The presence or absence of moisture seems to play the most important rôle in germination. Sometimes the vitality is destroyed by drying. In the case of Solanaceæ the lack of oxygen was fatal. Plants of this family failed to germinate when buried in moist soil even less than an inch in depth. The same seeds germinated when brought to the surface.

Haven Metcalf,
Secretary